

REMARKS

Claim 1 has been amended to incorporate features of claims 3 and 4, as well as based on page 12, line 5 of the specification. Claims 2-4 have been canceled. Claim 18 has been amended to depend on claim 17.

Entry of the amendment is respectfully requested.

Art Rejections

Claims 1-9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Minoru (JP 2002-311241, A, machine translation from Japanese to English). Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minoru (JP 2002-311241, A, machine translation from Japanese to English). Claims 15-17, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minoru (JP 2002-311241, A, machine translation from Japanese to English) in view of Shibue (US 6,503,581 B1).

Applicants respectfully submit that the present invention is patentable over the cited art, and request that the Examiner reconsider and withdraw the rejections in view of the following remarks.

The Present Invention

(1) IPS

The present invention is directed to the film suitable for IPS type LCD. According to Table 2 of the specification, the films of the present invention (Films (7) and (8)) have a good viewing angle characteristic for IPS type liquid crystal.

(2) R_p

The stretched film of the present invention satisfies a maximum retardation (R_p) at 550 nm in an in-plane direction of the expression of $75 \text{ nm} \leq R_p < 400 \text{ nm}$.

(3) $(n_x - n_z)/(n_x - n_y)$

In examples of the present specification, the value of $(n_x - n_z)/(n_x - n_y)$ is not described. However, the value of $(n_x - n_z) / (n_x - n_y)$ is determined by " R_p ", " R_{th} " and " t " according to the following formulae which are well known to a person skilled in the art. The formula (2) is described in page 27, line 1 of the present application.

$$R_p = t(n_x - n_y) \quad (1)$$

$$R_{th} = t \left[\frac{(n_x + n_y)}{2} n_z \right] \quad (2)$$

$$(n_x - n_z)/(n_x - n_y) = \{(R_p + 2R_{th})/2R_p\} \quad (3)$$

With regard to examples of the present specification, the value of $(n_x - n_z)/(n_x - n_y)$ is calculated by using " R_p ", " R_{th} " and " t " and indicated in Table B below.

(4) The relationship of n_y , n_z and n_x

The relationship among n_y , n_z and n_x is determined by the value of $(n_x - n_z)/(n_x - n_y)$ as indicated in Table A below.

Table A

$(n_x - n_z)/(n_x - n_y)$ is more than 0 and less than 1	$n_y < n_z < n_x$
$(n_x - n_z)/(n_x - n_y)$ is more than 1	$n_z < n_y < n_x$
$(n_x - n_z)/(n_x - n_y)$ is minus	$n_y < n_x < n_z$

According to data of Table 1 of the present specification, the value of $(n_x - n_z)/(n_x - n_y)$ and the relation of n_y , n_z and n_x are summarized in Table B below.

Table B

	Content of copolymer (A)	Rp	Rth	t	$(n_x - n_z) / (n_x - n_y)$	The relation of ny, nz and nx
	Wt%	nm	nm	nm	-	
Ex1	85	120	250	80	2.58	$n_z < n_y < n_x$
Ex2	85	385	45	80	0.62	$n_y < n_z < n_x$
Ex3	85	75	370	80	5.4	$n_z < n_y < n_x$
Ex4	85	12	380	80	32.2	$n_z < n_y < n_x$
Ex5	78	95	225	80	2.9	$n_z < n_y < n_x$
Ex6	90	165	285	80	2.2	$n_z < n_y < n_x$
Ex7 Film (7)	55	350	-40	80	0.39	$n_y < n_z < n_x$
Ex8 Film (8)	50	300	20	80	0.57	$n_y < n_z < n_x$

Exs 1-6 are outside of the scope of claim 1. Ex 2 satisfies the value of $(n_x - n_z) / (n_x - n_y)$ and $n_y < n_z < n_x$, but does not satisfy the content of copolymer (A), so Ex 2 is outside of the scope of claim 1.

According to the Table 2 of the present specification, the sheet polarizers using the Films (7) and (8) have good viewing angle characteristics for IPS type LCD.

3. Minoru (JP 2003-311241)

(1) IPS

Minoru is silent about a retardation film suitable for IPS type LCD.

(2) Rp

One of the characteristics of the present film is that Rp is large, i.e., 75 nm $R_p \leq 400$ nm, so the present film can compensate for a birefringence of liquid crystal.

In contrast to this, the film of Minoru has a retardation (R_p) in-plane direction of less than 20 nm (paragraph 0107). Therefore, Minoru is directed to a biaxially stretched film having small retardation.

Accordingly, the present invention is different from that of Minoru.

(3) $(n_x - n_z)/(n_x - n_y)$

Minoru is silent about the value of $(n_x - n_z)/(n_x - n_y)$. Minoru discloses a film having $R_p = 2$ nm, $R_{th} = 3$ nm in example 1. The value of $(n_x - n_z)/(n_x - n_y)$ of Minoru's film (example 1) is 2 which is more than 0.9 as calculated below.

$$\begin{aligned} & (n_x - n_z)/(n_x - n_y) \\ &= \{(R_p + 2R_{td})/2R_p\} \\ &= (2 + 2 \times 3)/2 \times 2 \\ &= 8/4 \\ &= 2 \end{aligned}$$

(4) The relationship of n_y , n_z and n_x

Minoru is silent about the relationship of n_y , n_z and n_x . The value of $(n_x - n_z)/(n_x - n_y)$ of Minoru's film (Example 1) is 2 as explained the above. The relationship of n_y , n_z and n_x is " $n_z < n_y < n_x$ ", which is different from the present invention.

(5) Summary

Minoru is silent about a film having $75 \text{ nm} \leq R_p \leq 400 \text{ nm}$, $n_y < n_z < n_x$ and $0.3 \{(n_x - n_z)/(n_x - n_y)\} \leq 0.9$ which is suitable for IPS mode LCD. Accordingly, the present invention is not obvious over Minoru.

4. Shibue (US6503581)

Shibue only discloses a protective film and a viewing angle compensation film for LCD, and thus does not make up for the deficiencies of Minoru.

Accordingly, the present invention is patentable over the cited art, and withdrawal of the rejections is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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